CHRONIC WASTING DISEASE

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- **Condition** — chronic wasting disease, CWD, prion disease of cervids, cervid spongiform encephalopathy.

- **Agent** — an unnamed prion protein.

- **Significance** — CWD has the potential to infect and cause mortality in a variety of cervids. Infections have been reported in wild mule deer, elk, and white-tailed deer in a small area of the western US. Infections in game farmed elk also are known.

- **Background** — although newly identified, CWD probably occurred in a localized area of Colorado/ Wyoming/ Nebraska for quite some time. It may be the result of local mutation of a similar agent that causes scrapie in domestic sheep. However, CWD is known to occur only in cervids. The disease can occur as a 'silent' infection for many years but eventually, infected deer and elk cannot maintain weight and slowly waste away. Excessive salivation as well as lethargy, incoordination, and drooping head and ears also are common in individuals that show clinical signs. Infection appears to be fatal in all cases.

  The nervous system is the preferred habitat for the agent of CWD. Infections are associated with clear open spaces within the brain tissue that make it look somewhat like a sponge. Needless to say, these spaces result in changes to behaviour, attitude, and metabolism that lead to the clinical signs described above.

- **Life Cycle** — to date, we do not know the specific mechanisms of transmission of CWD. The disease can pass from one individual to another and can be passed from females to their offspring. Infectious material also can survive in the environment for an unknown period of time.

- **Distribution in Alberta** — **CWD is not known to occur in Alberta.** This statement is based on extensive surveillance of hunter-killed as well as game farm cervids throughout the province since 1996. Further to this, Alberta has been and will continue to be diligent in screening imported cervids to minimize the risk of importing this disease. There also is a program in place to allow game farmers to be certified as free of evidence of CWD. This initiative is driven by the game farm associations and is fully supported by the provincial agriculture and wildlife agencies.

- **Importance for Wildlife Management** — CWD in wild cervids appears to be extremely limited and mortality of deer and elk does not seem to affect overall productivity in infected populations in the short term. Some models applied to data collected in Colorado suggest that mule deer populations at the heart of the affected area may decline in 40-50 years.

  The primary concern about CWD is related to the potential for misrepresenting it as being equivalent to BSE, the infamous 'mad cow disease', a prion disease of bovids (cattle). BSE has been associated with a similar infection in humans and poses worldwide concern for public health and agricultural economics. **However, CWD and BSE are not the same.**

  Further to this, wildlife managers throughout western Canada and the US expend considerable time, effort, and monies on surveillance programs aimed at defining exactly where CWD occurs or does not occur in the wild. Alberta has examined over 1000 heads of hunter-killed deer and elk since 1996. **No cases of CWD have been found.**

  To date, infections in wild deer and elk are known only from a small area where Wyoming, Colorado, and Nebraska have shared

boundaries. Currently, all infections in farmed elk are linked directly or indirectly to wild cervids from the affected areas in the USA. There are numerous research projects underway to better define the host range, methods of transmission, diagnostic tests, impact on wild cervids, and risk to the public.

- **Public Significance** — this disease poses significant problems for farmers of elk and deer. CWD was introduced into captive (= farmed) elk populations via live wild elk and/or deer taken from affected areas in the USA. It was then unintentionally translocated to farms in various states and Saskatchewan. As a result, the economics of trade in live elk and their products (primarily velvet antler) have been seriously affected.

  The association with BSE has led to possible public health concerns. But, **there is no scientific evidence to suggest that CWD can infect humans and growing evidence that it is indeed quite different from BSE**. However, as a precaution, the World Health Organization (WHO) recommends that all products from animals *known to be infected with any prion disease* should be excluded from the human food source.

- **Prevention/Control** — CWD will soon be a federal reportable disease in Canada and appropriate surveillance and control programs are underway or are being developed. The programs are already being implemented in Saskatchewan. The procedures parallel those used to control and eradicate other federal reportable diseases and include on-going surveillance (testing of slaughtered animals, report of clinical signs), quarantine of suspect and confirmed affected premises, detailed trace-outs from all known affected premises, destruction of infected herds, and compensation of owners of infected elk or deer. Similar programs are underway in the USA.

  In addition, Alberta has stringent programs developed among government agencies, game farmers, and other stakeholders to continually search for evidence of CWD in farmed and wild cervids as well as limit the possibility of introducing infections in animals imported into the province.

- **Summary — Chronic Wasting Disease is a serious economic concern for elk and deer farmers in Alberta. In addition, it is prudent to take every precaution to avoid the establishment of CWD in wild cervid populations. However, strict programs are in place to limit the risk of introducing this disease into Alberta.**

additional materials:

The following web sites provide trustworthy information regarding CWD:

http://www.dnr.state.co.us
http://gf.state.wy.us
http://www.cfia-acia.agr.ca (follow the links to animal disease fact sheets)

March 10, 2001

ISBN No. 0-7785-1766-7
Pub No. I./011